



# NATIONAL PARK SERVICE

## Environmental Audit Program

### EnviroCheck Sheet

*Fuel Storage Tanks*  
*June 2002 Update*

#### FUEL STORAGE TANKS

This EnviroCheck Sheet covers the federal regulations applicable to tanks storing liquid fuels. Underground storage tanks (USTs) are regulated under the Resource Conservation and Recovery Act (RCRA). It does not include Occupational Safety and Health Agency (OSHA) or Clean Water Act requirements. OSHA requirements are included in the Hazardous Materials Storage EnviroCheck Sheet. Clean Water Act Spill Prevention Control and Countermeasures (SPCC) Program requirements are included in the SPCC Planning EnviroCheck Sheet.

It is estimated that the National Park Service (NPS) manages fuel in over 4,000 USTs and aboveground storage tanks (ASTs) nationwide. While this number has decreased as USTs have been replaced with newer ASTs, USTs still represent a significant environmental liability for the NPS. Consider the following:

- Twenty-five percent of the federally regulated USTs in the United States may be leaking; this does not include ASTs which also pose a significant environmental threat.
- Over the last six years, over \$15 million was spent on NPS fuel-related cleanup.
- Fines for noncompliance with fuel storage regulations can be substantial: improper or lack of filing UST notifications alone can result in a fine of \$10,000 per tank and more significant issues can result in fines up to \$27,500 per violation per day.
- Additional threats to water quality are now posed from gasoline storage tanks that contain up to 15 percent by volume of the fuel additive MTBE that degrades less readily and travels more quickly than other fuel components in groundwater. MTBE dissolves in water, making it extremely costly and difficult to remediate if spilled.

#### Auditor's Guidelines:

##### Records to Review

- UST and AST inventory registration records for all in-service, temporarily out-of-service, and permanently closed tanks
- Records for UST disposal, closure, and removal
- Tank inspection records or integrity tests

##### Features to Observe

- USTs and ASTs
- Any areas storing petroleum or non-petroleum oils
- Spill cleanup equipment
- Refueling areas
- Venting
- Fill pipes
- Vehicle maintenance area
- Tank leak detection systems and alarms
- Methods of inventory control

##### Persons to Contact

- Maintenance supervisor
- Ranger dispatchers and responders
- Auto mechanics
- Buildings and Utilities staff.
- Engineer or other responsible for tank inventory and maintenance

## LEGAL REQUIREMENTS

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### Federal Requirements

#### *Resource Conservation and Recovery Act (RCRA)*

1984, Congress added Subtitle I to the Resource Conservation and Recovery Act (RCRA). Subtitle I required EPA to develop a comprehensive regulatory program for USTs storing petroleum. Congress directed EPA to publish regulations that would require owners and operators of new tanks and tanks already in the ground to prevent, detect, and clean up releases. At the same time, Congress banned the installation of unprotected steel tanks and piping beginning in 1985.

The following tank systems do not need to meet **federal** requirements for USTs:

- Farm and residential tanks of 1,100 gallons or less capacity holding motor fuel used for noncommercial purposes;
- Tanks storing heating oil used on the premises where it is stored;
- Tanks on or above the floor of underground areas, such as basements or tunnels;
- Septic tanks and systems for collecting storm water and wastewater;
- Flow-through process tanks;
- Tanks of 110 gallons or less capacity; and
- Emergency spill and overfill tanks.

Keep in mind, state/local regulatory authorities, may include these tank types--be sure you check with these authorities before auditing an NPS facility.

In 1988, EPA issued UST regulations divided into three sections: technical requirements, financial responsibility requirements, and state program approval objectives. This check sheet focuses primarily on the technical requirements. EPA's technical regulations for USTs are designed to reduce the chance of releases from USTs, detect leaks and spills when they do occur, and secure a prompt cleanup. UST owners and operators are responsible for reporting and cleaning up any releases.

By December 22, 1998, all owners and operators of underground storage tanks (USTs) were required to upgrade, replace, or close tanks not in compliance with UST technical requirements under 40 CFR 280. UST system upgrading consisted of adding corrosion protection and installing devices to protect against content spills and overfills. All new tanks must conform to those requirements.

#### *National Fire Protection Association (NFPA) Codes*

Unlike for USTs, there is no comprehensive federal regulatory program governing ASTs. There are a variety of federal and state statutes and regulations, and industry codes and standards which apply to ASTs and focus primarily on containment, fire protection, and safety, rather than environmental issues, such as structural integrity, monitoring, and testing. ASTs have been regulated by states and local agencies for many years through the National Fire Protection Association (NFPA) codes and other industry standards. Recently, many states have passed laws regulating various aspects of ASTs. Many of these regulations are enforced by multiple state or local departments.

Appendix 4-4 of the "NPS Fuel Storage Tank Management Handbook" provides an overview of state and local regulatory programs affecting ASTs. This table is to be used for guidance only. The specific state or local regulations and policy documents should be referred to, or contact made with the appropriate agency to determine whether the current requirements are met. Other regulations that overlap with AST standards may include fire code regulations, environmental regulations, AST regulations, spill prevention and response planning requirements, and air pollution regulations.

This document does not necessarily contain all information needed to determine compliance status.
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### *Floating Fuel Systems*

U.S. Coast Guard regulations contained in 33 CFR 151 through 159 may apply if the park has floating fuel storage systems. Parks that have fueling systems located on barges or boats need to comply with Coast Guard regulations concerning spill and overflow protection, contingency planning and others.

### **State and Local Regulations**

The EPA has delegated management of the UST program to the states. Many states and regional or local governments (e.g., cities and districts) have promulgated more stringent requirements for fuel storage tanks (see <http://www.epa.gov/swrust1/states/index.htm> for contact information ). For example:

- Many authorities regulate heating oil USTs;
- Most states have specific registration forms and tank closure corrective action procedures; and
- Many states have registration, leak detection and inventory control standards for ASTs as well as USTs.

## **COMPLIANCE REQUIREMENTS**

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### **Tank Requirements**

Following are relevant UST standards required under RCRA (requirements also applicable to ASTs are noted):

- *Regulated Substances* - Petroleum products that are liquids at standard pressure.
  - Non-petroleum derived fuels such as soy oil - not regulated by UST regulations.
  - Waste gasoline - regulated under RCRA Subtitle C, not UST regulations.
  - Used Oil - regulated under UST regulations.
- *Defining UST/AST* - USTs have a volume 10% or more beneath the surface of the ground.
  - Vaulted tanks are USTs if there is insufficient space to physically inspect the tank.
  - Tanks in basements are ASTs, not USTs.
- *Exempt USTs* - (Federal regulations only, state regulations vary)
  - USTs of less than 110 gallons.
  - Heating oil USTs used for on-site consumption.
- *Performance Standards* - Leak detection, corrosion protection, spills and overfill protection required.
  - Leak detection required for all tanks; spill/overfill prevention and corrosion protection required for new tanks at installation.
  - Various technologies are allowed under the Federal program to meet requirements (see attached table).
  - Leak detection and corrosion protection apply to piping as well as tanks.
  - USTs storing fuel for an emergency generator - deferred from release detection requirements but must still meet spill/overfill and corrosion protection requirements.
- *Registration/Notification* - The parks must register their tanks with the EPA authorized state UST program within 30 days of beginning operation. Existing tanks should already be registered. If the state does not have an authorized UST program, the tanks must be registered with the EPA.
- *Tank Closure and Change-In -Service*
  - Temporary Closure is up to 12 months. If greater than 3 months, lines (except the vent) must be capped; pumps and man ways must be secured.

- USTs must be permanently closed in accordance with authorized state specified procedures including notification at least 30 days before closure and site assessment<sup>1</sup> to investigate for the presence of any environmental contamination.

#### *Pipelines, Hoses and Joints*

More than just the tank of an UST or AST is subject to regulation. Pipelines, hoses and joints that carry petroleum products are also subject to regulation. For example:

- Facilities with onshore pipelines may be required to prepare a response plan (49 CFR 194);
- Underground piping as well as the tank associated with a UST system is subject to corrosion protection and leak detection requirements;
- AST piping valves and joints must be included in SPCC Plans; and
- UL-approved hoses must be used for gasoline dispensing hoses.

#### **Miscellaneous Storage Tank Issues**

##### *Oil/Water Separators*

An oil/water separator is a system that allows for the separation of free oils (hydrocarbon and other petroleum products) from water. Parks can utilize oil/water separators in parking lots or maintenance bays. From the separator, the wastewater stream is discharged to a Publicly-Owned Treatment Works (POTWs) or to a Park's wastewater treatment plant. Other separators may discharge their wastewater into storm drains, septic systems, leach fields, retention and settling ponds, or constructed marshlands. In these cases, Parks may need to obtain a National Pollutant Discharge Elimination System (NPDES) permit that sets the levels at which various pollutant, including oil and grease and heavy metals are acceptable or need treatment prior to being discharged. The Maintenance Wastewater EnviroCheck Sheet provides further detail on permitting requirements.

##### *Concessioner Responsibilities - Tank Management and Operation*

If concessioners, contractors or other third parties are contracted to manage, operate and/or maintain tanks, responsibilities and management requirements should be clearly detailed in contract language. NPS Special Directive 90-6 delineates UST compliance and financial responsibilities for concessioner-owned tanks or tanks owned by NOS assigned to concessioners under a concessions contract.

**Table 1: Summary of UST Concessioner Responsibilities**

Owner	Operator	Demonstrate Financial Responsibility	Responsible for Tank Compliance
NPS	NPS	Not Applicable	NPS
Concessioner	Concessioner	Concessioner	Concessioner
NPS	Concessioner	Concessioner	<i>Facility assigned to concessioner - concessioner responsible</i> <i>Facility not assigned to concessioner - NPS responsible</i>
NPS	NPS and Concessioner (No Sales to Public)	<i>Concessioner responsible for facility maintenance – concessioner must demonstrate</i> <i>NPS responsible for facility maintenance - no demonstration required.</i>	<i>Facility assigned to concessioner - concessioner responsible</i> <i>Facility not assigned to concessioner - NPS responsible</i>

<sup>1</sup> Before permanent closure or a change-in-service is completed, tanks owner/operators must assess the site in accordance with 40 CFR 280.72. This assessment includes measuring for the presence of a release where contamination is most likely to be present. Determining the extent to which a site is assessed is beyond the scope of the NPS audit program. However, auditors should confirm that a site was assessed before tank closure.

### *AST versus UST*

There are pros and cons to each type of system. ASTs are not necessarily the correct solution for a facility. Considerations include:

- Local Fire Code Requirements and permitting considerations;
- Availability of space, adequate property boundary setbacks;
- SPCC applicability; and
- Operation and maintenance requirements.

A feasibility analysis should be conducted prior to making a decision. For further information, refer to the NPS Fuel Storage Management handbook.

### *Fuel Needs Analysis*

The parks should conduct a comprehensive evaluation of their fueling facilities, usage, and needs, to eliminate or reduce fuel storage and handling **where feasible**. Key considerations include:

- **Outside Services**
  - Take NPS vehicles to the service station outside the park;
  - Discontinue marina-fueling operations; let boats go down the lake;
  - Discontinue NPS transport of fuel from bulk storage facilities to smaller tanks in the park; have the vendor deliver directly to the point of use facilities;
  - Added service cost and inconvenience is offset by reduced operating costs and environmental and regulatory liability.
- **“Right-sizing” Facilities**
  - Reduce the fuel storage volume or number of tanks in service;
  - Consolidate multiple fueling facilities at one location.
- **Alternative Energy/Fuel Sources**
  - Reduce the amount of fuel handled thereby lessening regulation and liability;
  - Reduce air emissions by using cleaner burning or non-combustion fuel sources;
  - Contribute to NPS energy efficiency and alternative fuel goals under the Energy Policy Act (EPACT) and Executive Order (EO) 13149, Greening the Government Through Federal Fleet and Transportation Efficiency;
  - Demonstrate NPS commitment to be a model in sustainable practices.

Note: Conversion from USTs to ASTs may cause a park to exceed the aboveground petroleum storage volume threshold above which SPCC regulations apply.

### *Alternative Energy/Fuel Considerations*

Life cycle cost analysis, not up-front cost should be used to assess the true cost of alternatives.

- EO 13149 requires that each agency’s Federal fleet fuel consumption be reduced 20 percent by the end of FY 2005, compared with FY 1999 petroleum consumption levels.
- Monthly lease costs from GSA for CNG fueled vehicles are reduced by 10 percent. Other manufacturer and utility incentives and alternative financing are available.
- Electric, propane and CNG vehicle fueling occur “off-duty”; the time spent by employees filling vehicles is reduced.

Examples of alternative energy/fuel opportunities are summarized in Table 2.

Table 2: Alternative Energy/Fuel Opportunities		
Space Heating	Remote Power Generation	Alternative Fuel Vehicles (AFVs)
Photovoltaic	Photovoltaic	Electric
Geothermal	Micro-hydroelectric	Propane
Passive Solar	Wind	Compressed Natural Gas
Natural Gas Pipeline	Compressed Natural Gas	Methanol (M85)
Compressed Natural Gas	Propane	Ethanol Blends
Propane		Biofuels (e.g., Soy Oil)

## POLLUTION PREVENTION

- With the addition of any new tank, consider switching to propane or compressed gas to eliminate the need for liquid fuel storage.
- Minimize threats to water quality, both to drinking water and watershed sources that support sensitive ecological habitat, by complying with regulatory requirements and following best management practices.
- Maintain an accurate and up-to-date inventory of all fuel tanks, regulated and unregulated; register tank locations with a geographic information system or other means.
- Find opportunities to minimize fuel handling and storage at park facilities.
- Utilize renewable energy and environmentally preferable products as alternatives to traditional petroleum based fuels.
- Specify double-walled ASTs or concrete vaulted ASTs and double-walled fiberglass reinforced plastic (FRP) USTs that provide maximum environmental protection.
- Given limited resources, work with the regulatory agency to use a risk-based corrective action approach in cleaning up first those tanks that pose the greatest risk to human health and the environment.

## COMMON VIOLATIONS OF UST REGULATIONS DISCOVERED AT FEDERAL FACILITIES

Several EPA regions have developed a list of common violations that have been discovered during multi-media compliance audits at federal facilities. These lists do not include all program areas addressed by the NPS Environmental Audit Program. However, since EPA has specifically identified these issues as common compliance violations, they are being identified in the appropriate check sheet. Auditors should keep these issues in mind as they review check sheet audit questions. Following are common violations of RCRA, Subtitle I regarding USTs:

- Failure to provide any release detection for underground piping.
- Failure to register USTs.
- Failure to conduct leak detection testing on USTs.
- Failure to conduct release detection monitoring.
- Failure to perform required maintenance on, and calibration of, electronic tank leak detection devices. A solution for this problem maybe to include operational programming and maintenance in the equipment installation contracts.
- Failure to maintain records of leak detection.
- Failure to maintain records of leak detection device maintenance.
- Failure to maintain UST release detection records (records of monthly testing for automatic systems).
- Failure to properly close UST systems.
- Failure to properly install UST systems (fiberglass risers on tank vent pipes).

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**FOR MORE INFORMATION**

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- NPS WASO UST information 202-565-1240.
- NPS Regional UST/AST Coordinators (see Audit Program Contact List in Operating Guide).
- NPS Fuel Storage Management Handbook, NPS WASO Park Facility Management.
- RCRA/UST, Superfund, EPCRA Hotline, 1-800-424-9346.
- NPS Sustainable Energy and Resource Conservation Central. <<http://www.nps.gov/renew>>
- DOI Alternative Fuels Virtual Library. <<http://www.ios.doi.gov/pam/pmemtb3.html>>



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CHECKLIST ITEM	PRIORITY	NOTES
<b>General Requirements</b>		
1. There is an up-to-date inventory of all USTs and ASTs at the park, both registered and unregistered, that includes the following information: <ul style="list-style-type: none"> <li>Tank type (AST/UST);</li> <li>Tank location;</li> <li>Size</li> <li>Tank status (i.e., active or closed);</li> <li>Contents (e.g., No. 2 fuel oil, gasoline, etc.);</li> <li>Age;</li> <li>Construction;</li> <li>Use (e.g., vehicle fueling, residential heating, etc.);</li> <li>Leak detection method;</li> <li>Corrosion protection;</li> <li>Spill control; and</li> <li>Overfill equipment (including secondary containment).</li> </ul> [BMP]	3	
2. State and local environmental agencies have been contacted to determine fuel storage tank requirements applicable to UST and AST systems at federal facilities, in general, and park operations, in particular. [BMP]	3	
3. If required, fuel storage tanks are properly registered with the state or local authority, or department designated in Appendix II of 40 CFR 280, in accordance with federal and state/local requirements. <ul style="list-style-type: none"> <li>USTs [40 CFR 280.22(a)]</li> <li>ASTs [EO 13148]</li> </ul>	2	
4. A fuel needs analysis has been conducted and projects have been implemented to reduce fuels handling where opportunities exist, including the use of alternative energy sources and alternative fueled vehicles. [BMP]	3	
<b>Underground Storage Tanks</b>		
<i>Upgrading of Existing Tanks</i>		
5. By December 22, 1998, all existing UST systems were upgraded to meet performance standards under 40 CFR 280.20. [40 CFR 280.21]	2	
<i>Release Detection</i>		
6. All UST systems and associated piping meet the specific requirements to prevent releases due to structural failure, corrosion or spills and overfills. [40 CFR 280.20]	2	
7. A specific method of release detection has been chosen (e.g., monthly inventory control, manual or automatic tank gauging, tank tightness testing, etc.). [40 CFR 280.43]	2	
8. The release detection method chosen can detect a release from any portion of the tank and the connected underground piping that routinely contains product in the UST system. [40 CFR 280.40(a)]	2	
9. Depending upon the method of release detection chosen, appropriate monitoring records are maintained onsite. [40 CFR 280.45]	2	
10. Smoking and open flames are prohibited in areas used for fueling, fuel storage, or enclosed storage of equipment containing fuel ("No Smoking" signs are prominently posted in fueling areas). [BMP]	3	



<i>Inspections</i>		
11. Park personnel ensure that releases do not occur due to spilling or overfilling during transfer of product into the tank [40 CFR 280.30]. Methods to ensure this may include: <ul style="list-style-type: none"> <li>• Park staff ensures that fuel delivery personnel are knowledgeable about the specific tank filling procedures for the park's tanks.</li> <li>• The tank is gauged prior to delivery to ensure there is sufficient space for product receipt. [40 CFR 280.30(a)]</li> </ul>	2	
<i>Recordkeeping</i>		
12. The following information is maintained onsite, immediately available for inspection [40 CFR 280.34(c)]: <ul style="list-style-type: none"> <li>• Corrosion expert's analysis of site corrosion potential if corrosion protection equipment is not used; [40 CFR 280.34(b)(1)]</li> <li>• Documentation of operation of corrosion protection equipment; [40 CFR 280.34(b)(2)]</li> <li>• Documentation of UST system repairs; [40 CFR 280.34(b)(3)]</li> <li>• Recent compliance with release detection requirements; [40 CFR 280.34(b)(4)]</li> <li>• Results of the site investigation conducted at any permanently closed tank. [40 CFR 280.34(b)(5)]</li> </ul>	2	
<i>Tank Closure</i>		
13. When an UST system is temporarily closed, The park continues the operation and maintenance of corrosion protection in accordance with 40 CFR 280.31, as well as any release detection requirements. [40 CFR 280.70]	2	
14. UST systems that have been closed were closed in accordance with state and local requirements including site investigation and tank disposal. The closure has been documented with the state or local authority, at least 30 days before permanently closing a tank. [40 CFR 280.71(a)]	2	
15. Permanently closed tanks have been emptied and cleaned (by removing all liquids and accumulated sludge) and were either removed from the ground or filled with an inert solid material. [40 CFR 280.71(b)]	2	
16. If an UST systems was permanently closed or if there was a change-in-service of a tank system, the UST system site was assessed to determine the presence of a release where contamination is most likely to be present. [40 CFR 280.72]	2	
<i>Aboveground Storage Tanks</i>		
<i>Recordkeeping</i>		
17. Accurate inventory records are kept on site for indication of possible leakage from tanks or piping. The inventory should include date and amount delivered, and amount used between deliveries. [NFPA 30A, 2-1.5]	2	
<i>Storage and Construction</i>		
18. Each tank is anchored to withstand flooding or uplifting by groundwater, including when the tank is empty. [NFPA 30A, 2-4.4(b)]	2	
19. Tanks are enclosed with a chain link fence at least 6 ft. high. Above ground tanks are resistant to damage from the impact of a motor vehicle or is protected by concrete collision barriers at least 4 inches in diameter and 4 feet apart. [NFPA 30A, 2-4.7.1]	2	
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20. Vent pipes that are for normal tank venting terminate at least 12ft. above ground level for Class I storage tanks. [29 CFR 1910.106 (b)(2)(vi)(b), NFPA 30A, 2-4.4(i)]	2	
21. Emergency vents are vapor tight and are permitted to discharge into the vault. [NFPA 30A2-4.4(j)]	2	
22. Openings for gauging are provided with a vapor tight cap or cover. [29 CFR 1910.106 (b)(2)(viii)(d)]	2	
23. The delivery vehicle is separated from any AST by at least 25 feet, unless fuel is other than Class I liquid. [NFPA 30A, 2-4.9.2]	2	
24. Tank filling operations includes the delivery operator determining the tank ullage (available capacity). [NFPA 30A, 2-4.9.3]	2	
25. Piping is routed and protected so that exposure to physical damage and external corrosion is minimized. [29 CFR 1910.106 (c)(5), NFPA 30A, 2-4.6.7]	2	
26. Color code or other marking is used to identify the product for which the tank is used. [NFPA 30A, 3-6]	2	
27. All piping connections to the tank are above the normal maximum liquid level. [NFPA 30, 2-3.4.1]	2	
28. A clearly identified and easily accessible switch or circuit breaker is provided to shut off power to all dispensing devices in the event of an emergency. The switch is located within 100ft. of the dispensing device. [NFPA 30A, 4-1.2]	2	
29. A listed emergency breakaway device designed to retain liquid on both sides of the breakaway point is installed on each hose dispensing Class I liquids. [NFPA 30A, 4-2.7]	2	
30. Smoking and open flames are prohibited in areas used for fueling, fuel storage, or enclosed storage of equipment containing fuel. [NFPA 30 2-9.3]	2	